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WITH
Compliments of the Author. G. L. Porter

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SICKNESS A FACTOR OF POLITICAL ECONOMY. COST OF SICKNESS TO THE INDIVIDUAL AND THE STATE.

ANNUAL ADDRESS

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BY

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PRESIDENT'S ADDRESS.

Gentlemen of the Connecticut Medical Society and Delegates of Sister Societies:

In accordance with due and ancient custom, established by our professional ancestors, and by their successors honored in the observance, we are again assembled to share the fruition of the year's experience in the practice of medicine.

To the Ninety-eighth Annual Convention of the Connecticut Medical Society I give you cordial greeting; to the consideration of the topics announced in its programme I welcome you; to a personal participation in the discussions I invite you.

To the present membership is transmitted the responsibility of perpetuating the prosperity of our Society, made eminent by the achievements in surgery and medicine of many of its distinguished leaders, adorned with the charms of tradition and enriched with the wisdom of professional experience. The desire for mutual benefit and improvement cherished by its founders, who for many years attempted in vain the organization as originally proposed, finally established a Society for the purpose of "rendering the Practice of Physic more Safe and Serviceable to the Patient, and at the same time yield more Satisfaction and Honour to the Profession."

This honorable ambition of the charter members of the Society has been its guide through the nearly completed century of its existence.

The perusal of the record of its proceedings reveals that with varying conditions of public opinion arose many expressions of dissensions, of opposition and of protest, but that a sturdy loyalty, "which runs through all and doeth all unite," to the principles of the Society, equally the principles of the profession, has ever encouraged its members to labor for the increase of medical knowledge, and for the general welfare. Progress in this direction has resulted from efforts made within the Society with scant assistance from without.

Its experience has been the same as that common to many similar attempts by medical men to secure the public health of communities. Their benevolent aspirations have often been discouraged by feeble support, abashed by a disdainful apathy or extinguished by unreasoning denunciation.

The opposition to medical interference with the spread of disease, upon the part of an ignorant public, when the attention of the practitioner is so imperatively demanded by the individual sufferer, is a curious historical fact. Its universality attests that it is an inherent mental quality. Not to recur to tradition, possibly colored by the glamour of an interested exaggeration, illustrative instances present themselves in our own time. During the recent cholera epidemic in Spain and in Italy, the populace refused to avail themselves of the sanitary and prophylactic measures proposed by medical authority, and were so violent in personal abuse that physicians required, in their daily attendance upon the sick, the constant protection of police and military power. During the epidemic of cholera in St. Petersburg, within two days in June, 1831, "One German physician was killed, two narrowly escaped the same fate and six others were severely beaten;" * a gruesome fate and a hard experience to reward our brethren who were enacting for suffering strangers, in a strange land and among strange people, the Christian devotion of the good Samaritan.

Is this blind spirit of un-reason and fanaticism the avatismal strain of our fetich-worshipping progenitors, when law and religion and medicine emanated from the banks of

"The still glassy lake that sleeps
Beneath Aricia's trees—
Those trees in whose dim shadow
The ghostly priest doth reign,
The priest who slew the slayer,
Who shall himself be slain" †

or is it the intuitive protest against trust in human efforts, when mankind, despairing of self-protection, believes that diseases and epidemics are the tangible evidences of the anger of an offended and all-powerful God? Such a supposition, however, is not sufficient; for the opposition, active or latent, to the assistance of

* McClellan's Report on Cholera, p. 552. † Macaulay's Lake Regillus, v. 10.

medical progress largely pervades the ranks of the educated. The same action of the profession has been ascribed to the most criminal motives, at various times, for diametrically opposite reasons. The clever Lady Montague, when she introduced from Constantinople into England, the process of inoculation of smallpox to secure subsequent protection from the disease, airily wrote upon the first day of April, 1717: "I am patriot enough to take pains to bring this useful invention into fashion in England; and I should not fail to write to some of our doctors very particularly about it, if I knew any of them that I thought had virtue enough to destroy such a considerable branch of their revenue, for the good of mankind. But that distemper is too beneficial to them not to expose to all their resentment the hardy knight that should undertake to put an end to it."

The other day, April, 1889, the law-makers of the State of New York were informed by an expert, so-called, that vaccination was no protection against small-pox, and if not told in so many words, were left to infer that the doctor vaccinated, not to protect the patient, but to collect his fee. Such opposing reasons nullify each other.

To explain the mental grounds of this widespread undercurrent of popular opposition to medical efforts for the public benefit, attempted by a profession that in official utterances and in personal self-sacrifices substantiates its claim to probably prevent and certainly to combat diseases, may wisely engage the study and the pen of the psychological student. An honest review of the history of plagues and epidemics testifies that, faithful among the faithless, medical men have fearlessly exposed themselves to every personal danger, enduring privation, suffering, and death itself, if thereby they might minister to the afflicted and find out some way of escape for the rest of mankind.

The history of our Society, illustrating at its organization the condition of the profession in New England after the close of the Revolutionary War, and in its different decades the progress of medical knowledge throughout the State, recounting the changes in its general relations, and its chartered rights as affected by Legislative enactments, is instructive and encouraging. But a review of this history and a comparison of the Medical and Surgical theories and beliefs of the eighteenth

and nineteenth centuries will be more appropriate when the completion of its five score years shall have been accomplished.

The most important event in the medical world during the past year, was the Congress assembled in Paris in July, 1888, for the study of Tuberculosis. Its list of members included the names of many representative men in General and Veterinary Medicine throughout the world. Its time was occupied by the reading of papers upon, and the discussion of questions relating to the contagiousness of consumption from infected persons and animals, and the transmission and development of the bacilli of tuberculosis during the process of the digestion of the meat and milk of diseased cattle.

The statements of personal observation and experience, as well as the reports of committees for experimental investigation; the design of essays, and the purport of discussions developed an almost universal consensus of belief in the possibility and probability of its contagiousness.

In some cases cited, so direct was the exposure to the disease and its subsequent development; in others so eliminated were foreign sources of contamination, so exactly did experimental provings coincide with apriori reasoning and recorded histories, that individual opinions supported and endorsed the radical conclusions of the meeting; conclusions, which may seem to many unacquainted with the startling illustrations and deductions from individual cases and classified statistics, presented during the discussions, to have been at least hastily, and perhaps rashly, formulated as the deliberate expression of the belief of the medical profession.

The most remarkable event in our National life during the past year, was the centennial celebration of the Inauguration of the first President of the Republic. The permanent value of so general an observance of the event is its educating influence upon the National character. The study of the resemblances and contrasts of the two historic events, separated by the interval of a hundred years; of the condition of the Nation, then essaying the original and unexpected problems of an experimental Republic—problems still further complicated by the jealousies, claims and opposing interests of the several States, and of the Nation, now cemented by common interests and accepted laws,

purified from the reproach of harboring "the sum of all villainies," fused into a homogeneous people in the furnace of internecine warfare, enriched with population and material wealth far beyond even the hope of its founders—a realization of these great contrasts should arouse a loyalty to the spirit of personal liberty, combined with civic duties which made possible the success of the Republic, and impress every thoughtful person with the burden of personal responsibility, not alone to preserve our heritage unimpaired, but also to transmit it, strengthened by the best efforts of his generation.

It seems appropriate to invite your attention to the consideration of a subject which is now under investigation by European Physicians and Statesmen, and in the near future will in America demand and command National action.

As physicians we are concerned in its study, most familiar with its effects, conversant with its immediate statistics, and best prepared by education and experience to obstruct its development; as members of the commonwealth we are liable personally and familywise; we are sure socially to suffer from the multiform evils of its results.

SICKNESS A FACTOR OF POLITICAL ECONOMY.—THE COST OF SICKNESS TO THE INDIVIDUAL AND TO THE STATE.

An extended research has not disclosed any tabulated statistics nor any previous paper upon this particular topic, except a brief paper upon the cost of scarlet fever, diphtheria and typhoid fever, in Albion, Michigan, by Dr. B. A. Brown; a reference to the cost to the city, in a paper upon an epidemic of yellow fever in Memphis, by Professor Brewer; a few sentences by Dr. Billings at the conclusion of his report upon the vital statistics of the tenth census, and an Inaugural Address before the College of State Medicine of London, England, in 1887, by Dr. R. Brudenell Carter, who writes that his address is not yet published.

At the beginning of this inquiry, its extent was not anticipated. It is a labor demanding many co-workers. An investigation of consumption upon somewhat similar lines undertaken by many physicians in England, was not completed for a number of years. With no claim to exhaustively present the case, enough statistics will be furnished to exhibit its importance, and to prove that by

accomplishing the decrease, or even preventing the increase of sickness, public men would practically demonstrate their Statesmanship.

Writers upon Political Economy hold that the fundamental purpose of National organization determines the unit of value. In the earlier civilizations of Asia Minor, and Southern Europe, when military aggrandizement established, enlarged, supported or destroyed the State, the military capacity of the commander, and the fighting efficiency of the army were the most important considerations, and the soldier was the unit. The ambition of governments encouraged the development of the warrior, and to this end overrode the claims of property, the comfort of the individual, the ties of family and relationship, and the sentiments of humanity.

"For Roman in Rome's quarrel spared neither lands, nor gold,
Nor limb, nor life, nor son, nor wife in the brave days of old."

On the rocks of classic Greece, joining his puny cry to the much resounding waves of the Egean, the Spartan infant asserted his right to live, and share in the glories of the heroes of Thermopylæ.

In medieval Europe, as increasing numbers became more dependant upon the products of agriculture, as indeed in all agricultural communities, the amount of fertile land and the number of slaves became the standards of value, and it was no longer the Soldier, who had then become largely the Soldier of Fortune, and the defender of the longest purse.

"'Soldiers! those German gentlemen are bought
For four pounds, eight and seven pence per man,
By England's King; a bargain as is thought.
Are we worth more? Let's prove it now we can;
For we must beat them, boys, ere set of sun,
Or Mary Stark's a widow.' It was done."*

Centres of population still enlarging in a multiple ratio increased their actual and artificial wants, which developed systems of agriculture, manufacture and transportation dependant upon labor, which in turn became in proportion to the extent that it was independent, one of the principal units of value.

* "Connecticut," by Fitz-Green Halleck.

"Labor," writes Adam Smith in his Wealth of Nations, "is the real measure of the exchangeable value of all commodities. Labor alone, therefore, never varying in its own value, is alone the ultimate and real standard by which the real value of all commodities can at all times and places be estimated and compared. It is their real price, money is their nominal price only."

This was the conclusion logically deduced from the philosophic teachings of Smith, Malthus, Ricardo, James Mills and Harriet Martineau. Hence arose the "System of natural liberty," founded on the right of the individual to an unimpeded sphere for the exercise of his economic activity—individualistic rights rather than Socialistic duties.

As capital, the accumulated wealth of labor; machinery, the Briarean cross of invention and material, and skilled and unskilled labor became factors in the problem, the commercial standard of value was shifted to the precious metals, and as these also were subject to the law of a supply and demand, the world-wide standard has been restricted to gold.

In contra distinction to the above theories the modern school of Political Economy holds that the wealth of Nations does not consist of military power, or material possessions alone, but resides in the intellectual and physical ability of its people to develop the agricultural and mineral resources of its territory, to institute systems of education, manufacture and transportation, to secure the largest individual liberty consistent with the rights of the community and personal duties to the State—to contribute materially and morally to the welfare of the race.

Nor is this strictly a modern theory. Antonio Serra, "regarded by some as the Creator of modern political economy," in 1613, when confined for attempting to liberate Naples from the Spanish yoke, and to establish a Republican government, inculcated "the importance towards the acquisition of wealth, not alone of favorable external conditions, but of energetic character and industrious habits in a population, as well as of a stable government, and a good administration of the laws."

The historic school in the writings of Adolf Wagner, "recognizes the State as not merely an institution for the maintenance of order, but as the organ of the Nation for all ends which cannot be adequately effected by voluntary individual effort. Whenever

social aims can be attained only, or most advantageously through its action, that action is justified. The cases in which it can properly interfere must be determined separately on their own merits, and in relation to the stage of the National development. It ought certainly to promote intellectual and æsthetic culture. It ought to enforce provisions for public health, and regulations for the proper conduct of production and transport. It ought to protect the weaker members of society, especially women, children, the aged and the destitute. It ought to secure the laborer against the worse consequences of personal injury not due to his own negligence." * "The abolition of the impolitic and discredited system of European Governments, by bringing to the surface the evils arising from unlimited competition irresistibly demonstrated the necessity of public action according to new and more enlightened methods." *

Political Economy, thus considered, does not hold a right of eminent domain, with independent laws and powers, subjecting all questions to the inexorable law of supply and demand, nor is it susceptible of precise and differential description, but it is only a single department—a most important one to be sure—in the wide realm of Sociology, and is subject to the direct and indirect influences of climate, country, environment, religion, customs and the energies of communities and individuals, resulting from the varying desires, ambitions, loves, hates and necessities of mankind.

In the United States, the River and Harbor Bills, the Post Office Department, the Interstate Commerce Law, bear witness that some of the claims of the modern school of Political Economy are recognized and accepted, but it is not within the compass of my subject to consider the intercurrent relations between the Government and the pursuits of its people, only as they involve the duty of the authorities to provide for the public health, circumscribing contagions, preventing epidemics, discovering and destroying the causes of disease. So reasonable, so natural, so axiomatic a claim upon "a Government of the people, by the people, for the people," might seem a work of supererogation, did we not remember that only within recent years have modern Governments accepted this responsibility, that State Legislatures

* Encyc. Brittannic.—Art., "Labor."

have rarely been enthusiastic in developing this probable means for great good results, and that the political wisdom of the entire country, deliberating in Washington, has purposely starved into dissolution the National Board of Health by ignoring its record of usefulness, and neglecting to make the required appropriation for its support.

An ideal monarchy has ample resources of husbandry and manufacture, of mines and commerce, of convenient inter-communication, of means of offence and defence, of sturdy, religious and contented people, of just and wise administration. An ideal republic must have all of these resources, and in addition must so educate its citizens that they may be prepared to perform those public duties of the State, which under other forms of government are intrusted to members of the nobility and privileged classes, who, by education, inheritance and association, have had exceptional preparation. Considering, then, that the development of our agricultural and mineral possessions: the application of science and invention to manufacture: the prosecution of business and vast railway enterprises: the conservation of religion and education: the support of the State: the political administration of its domestic and foreign affairs, depend upon "the common people:" especially contemplating the origin and fundamental theory of our Government, the conclusion is logical, that no other nation is as directly dependent upon the character, ability and strength of its citizens as our own. The unit of value in the Republic is the individual citizen, whose best type is found in him who, by personal endeavor and by public effort, has obtained the liberal education described by Milton: "I call, therefore, a complete and generous education that which fits a man to perform justly, skilfully and magnanimously all the offices, both private and public, of peace and war."

To how great an extent does the health of the people under any form of government contribute to the development of its resources: to what extent does sickness not only not contribute to, but often hinder and frequently prevent such development!

A nation is established and waxes great only by the combined activities of a healthy people; its decadence dates from their effeminacy.

How jealous is the experienced commander of the health of

his troops; with what care does the medical officer inspect the anatomy and investigate the physical history of the recruit, in search of all present personal defects, and probable cause of future impairment, for well do they both know that upon the possession of a "sound mind in a sound body" may depend success, not only in the immediate shock of opposing armies, but in the grand tactics of campaigns, involving the prolonged exposure of forced marches, with inadequate provisions and scanty clothing, when the stamina of hardy veterans may compel a bloodless victory. No holiday troops, but only soldiers inured to personal privation, and toughened by exposure to rain and snow, during marches and in unprotected camps, could have completed that famous march around Richmond, when under skies that ceased not by day nor night from raining, through mud, where experienced commanders humanely protested that troops could not move, the Army of the Potomac waded for eight days, and for more than one hundred miles from Petersburg to Appomatox, and without a general engagement, virtually ended the rebellion and conquered a peace by strategic methods, made possible only by the robust health of the boys in blue.

In all times people have realized that the warning of the prophet Samuel voiced the experience of mankind, that military power would demand and take the best material.

In affairs of State, of jurisprudence, of medicine, of theology, how necessary to investigation, judgment and decision, is an intelligence which is not impaired nor distorted by physical ailments. Says Voltaire: "The fate of a nation has often depended upon the good or bad digestion of a Prime Minister."

Business prosperity, struggling between the upper and nether millstones of the tyranny of capital and the tyranny of labor, financial ventures, exhausting body and mind with unceasing anxiety, often depend for success upon health and physical endurance.

The necessity of good health to accomplish the work of the farmer, the mechanic, the miner and the laborer, may be realized when we read that "it has been calculated that a fair day's work equals 300 foot tons (i. e., lifted one foot), a hard day's labor 450 foot tons, and the maximum day's labor has been fixed at 600 foot tons.

"It must be borne in mind that when the amount of work required exceeds the average amount of it, which the human system is capable of sustaining, the strain upon the nervous and muscular systems, and especially upon the heart, increases in a geometrical ratio." *

That "public health is public wealth," is an unquestioned adage, but it conveys slight significance of the importance of its possession. The car, the steamboat, the telegraph, the postal service, are public conveniences, and in their daily employment are used without a thought of how necessary they are in modern civilization, but when obstructed by design, by accident, by storm, the failure to perform their part in our daily life demonstrates their importance. No less marked is the contrast between the state of health and of sickness in the individual, and in the community. Prevented by sickness, the customary duties dependent upon the active brain, the busy hand, the intelligent strength cease. The laborer becomes a burden. The supporter becomes a dependant. The wage-earner becomes a surplus destroyer. As the value of perfect machinery is better appreciated when improved, and as health is more highly valued when absent, since "blessings brighten as they take their flight," the cost of sickness to the person and to the public will be the most tangible, striking and workable data by which to appraise the value of health.

Physicians comprehend so correctly what may be called the sympathetic aspects of sickness, the relations sustained by the ties of friendship, of kindred, of affection — the effects upon the constitution of the sufferer, upon the health of attendants, upon the inheritance of children, and the far reaching consequential damages of sickness, that to them only incidental reference is required. But sickness is not often considered in its monetary aspect alone, although it is frequently characterized as an expensive experience.

The precise cost of sickness to the individual cannot be definitely determined, because the conditions of life are so various. The recent sickness of the beautiful American actress, Miss Anderson, in its immediate expense and prospective loss, is estimated to have involved a loss to herself and to her business

*Dr. Joseph Jones, Ninth International Med. Congress, Vol. IV., p. 301.

manager of more than $50,000. For medical attendance upon his daughter, a generous father last April was reported to have rewarded her physician with a fee of $75,000. A praiseworthy precedent. The sickness of business and professional men often involves the miscarriage of enterprises and prevention of personal efforts, which immediately and prospectively occasion a monetary loss far in excess of the large direct expense of professional and other attendance. These exceptional cases are referred to, that they may be considered in determining an average.

In the first Annual Report of the Commissioner of Labor in 1886, made to the Secretary of the Interior, Commissioner Wright states (p. 142) that "a casual examination of these summaries" (Table of rate of daily wages in selected occupations throughout the United States,) "will show that any attempt to prove an American rate of wages must necessarily result in failure. There is no such thing as an American rate of wages." But for our purpose a determination of the precise amount is not required. An approximate average of the wages paid to skilled and unskilled labor is over $1.50 a day. When the laborer is sick, his medical attendance, medicines and food are estimated at $1.00 a day. But that we may under-, rather than over-estimate, we will claim that it costs the laborer daily, in loss of wages and necessary expenses for his own sickness $2.00, for the sickness of his wife or child, $1.00. The total population of the United States in 1880, was over fifty millions (50,155,783). Upon June 1st, 1880, an attempt was made to compile the number sick and disabled that day, omitting those under the age of fifteen years, lunatics, the blind, deaf and dumb. "This is the first experiment of this kind which has been made in this country, but similar attempts have been made in the censuses of Ireland and the Australian Colonies." It was only partially successful. In a total population of 13,998,301, there were reported 178,246 sick persons, with the exceptions above referred to. There were, probably, many not reported. The proportionate number of sick, had the full census been taken, would have been in round numbers 637,500 or 12.75 per thousand. There was no enumeration of the sick under the age of 15 years: a low estimate of sickness among children is one quarter of the total sick. Therefore it is

probable that upon June 1st, 1880, there were sick 637,500 men and women, and 159,375 children. From the above premises the cost to the individual, assuming that June 1st was an average day, and deducting one dollar a day for sixty-five days when the man might not have work, would be more than $392,000,000.

When the wage-earner is sick his earnings stop. The support of himself and of those dependent upon him must be defrayed out of his accumulation, or be supplied by the State. The cost to the individual is intentionally restricted to the loss of wages and personal expense, that it might be separate from the cost to the State.

To the sufferer his personal loss and sickness seem all important: to the community they may be thought worthy of sympathy and assistance, yet subordinate to the general welfare. Humanity tenders relief, but self protection demands the isolation of scarlet fever and diphtheria, the inclosure of small pox in pest houses, the quarantine of yellow fever in sanitary camps. In fashionable hotels and on shipboard the victim of contagious disease is regarded almost as a malefactor, although in this "piping time of peace" he is not subjected to the treatment experienced by Jonah.

Compared with the public interests, small and insignificant are those of the individual, who passes away and is soon forgotten, and whose place is taken by another, but freighted with grander possibilities, and wider responsibilities sails on our Ship of State.

"Sail on, O Union, strong and great!
Humanity with all its fears,
With all the hopes of future years,
Is hanging breathless on thy fate!"

The relative importance of the sickness of the individual, and the general sickness of the community, is best appreciated by considering the effects of a contagious epidemic. As increasing sickness proclaims the pestilence, an ill-defined dread asserts itself; public entertainments are unattended, educational institutions closed, public and private business is unperformed—fear engenders suspicion, suspicion enmity, enmity violence; a panic is inaugurated, communication is impeded or prohibited, food and other supplies are lessened, the duties incumbent upon family relations and common to the race are repudiated; fam-

ine, rapine and "the shot-gun policy" add their horrors: civilization returns to barbarism; humanity becomes inhuman.

Cholera and yellow fever portray but feebly the terrible experiences of those pestilences, which so pitilessly destroyed mankind until the beginning of the 19th century, when their violence was abated by medical ingenuity and wisdom and sanitary precautions. The history of a single disease will illustrate.

Small pox was not known by the early Greeks and Romans, was first recognized A. D., 569, the year of the birth of Mahommet, when an Abyssinian army threatening Mecca unexpectedly raised the siege, probably because of the dreadful mortality caused by an epidemic of this disease. Bruce during his search for the sources of the Nile, found a manuscript of the war confirming the Arabian account. A tradition of the East assigns the origin of the disease to the camel.

A disease so fatal as to cause a death rate of 35% of all attacked: so infectious from person and clothing, seizing, with few exceptions, all who for the first time come within its influence, and in some cases re-attacking for the second, third and even more times, largely evolves its own history.

At its first entry into a community, all being unprotected, its ravages were general. In countries with dense populations and constant commercial intercourse, there would only occasionally be extensive epidemics among the adult population, but among the young the sickle of death would reap continual harvests.

Dinsdale, who inoculated the Empress Catherine, puts the annual deaths from small pox in the Russian Empire, at two millions. In France and Sweden, one-tenth of all the deaths were caused by small pox: in England, not in epidemic years, a fourteenth. It has been estimated that in Europe, previous to the year 1800, there died of this disease alone, more than twenty-five millions of people.

Clark testifies that the small pox mortality of China is incalculable.

In communities isolated by geographical, political or commercial barriers, after an epidemic, there might be comparative immunity, until the contagion was again imported.

"In 1734, Greenland suffered its first epidemic, when nearly two-thirds of its population were swept away."

In Iceland the disease had been early known, but upon its eighteenth visitation is said to have destroyed 18,000 persons, out of a population of about 50,000. Of this epidemic, Crantz narrates this terrible detail: "In one island they found only one girl with the small pox upon her and her three little brothers: the father having first buried all the people in the place, laid himself and smallest sick child in a grave, raised with stones, and ordered the girl to cover him."

Holwell, describing its ravages in Bengal, says: "Every seventh year it is epidemic in March, April and May. The disease is of the most malignant kind, from which few, either native or European, escape * * * many dying upon the first, second or third day of the irruption."

On this side of the Atlantic, it has been known since 1518, when it concurred with fire and famine and warfare to complete the destruction of St. Domingo, and soon after in Mexico, smiting down three and a half millions of its population.

Prescott describes this terrible epidemic as "sweeping over the land as fire over the prairies, smiting down prince and peasant * * leaving its path strewn with the dead bodies of the natives, who perished in heaps like cattle stricken with murrain." "In Brazil in 1563, it extirpated whole races of men: in the single province of Quito, it destroyed upwards of one hundred thousand Indians."

In the United States, Catlin, in his "Letters on the Manners, Customs and Condition of the North American Indians," thus vigorously notes the effects of this disease: "Thirty millions of white men are now scuffling for the goods and luxuries of life, over the bones and ashes of red men: six millions of whom have fallen victims to small pox, and the remainder to the sword, the bayonet, or whiskey."

In 1837, near the forts on the Missouri, this disease raged among the Mandans, the Crows, the Black Feet, the Ricaries and the Assinniboines.

The Assinniboines, nine thousand in number, were nearly exterminated.

The Ricaries were reduced from four to two thousand. The Mandans, a once powerful tribe, reduced by many previous disasters to fifteen hundred souls, were exterminated, save a remnant of thirty persons.

Thus has history recorded these sad stories, revelations of unutterable misery. For more than a thousand years this "pestilence which walketh in darkness, this destruction which wasteth at noon-day," was the unwelcomed guest of our ancestors. A temporary respite was purchased only by an increase of future victories. Its coming was almost as certain as death, its frequent companion. Its sign manual was stamped upon the features of many races. There was no protection, save personal idiosyncracy, or a previous attack, and the latter sometimes failed. In Europe, at the beginning of the 18th Century, this was the bitter experience:

I. For every five persons thus secured against the disease, at the price of much past suffering, one, at least, must have died.

II. One-fourth of mankind were thus destroyed, or maimed, or disfigured for life.

III. No rank protected. In the family of William III., of this disease died his father and mother and Mary, his wife: his uncle, the Duke of Gloucester, his cousins, the oldest son and the youngest daughter of James II., and he had himself suffered from it most severely, barely surviving with a constitution damaged for life.

A single case of small pox now terrorizes a community, and properly demands the attention of the authorities. Imagine that condition of affairs when it was not very unusual for every fifth person to have the disease. The cloud of this terror was never so dark as just previous to A. D., 1717, for English intelligence began to realize its certain and fatal influence.

"Just then, as through one cloudless chink of a black, stormy sky, shines forth the dewy Morning Star," the rays of another Star of Promise illumined the East.

During the Middle Ages, a protection against small pox was secretly employed among the Chinese, and the Brahmins had long known its value. It was practised in Persia, Armenia, Georgia, and among the peoples dwelling upon the eastern shores of the Mediterranean. In 1714 16, communications by medical men regarding the practice of inoculation in Constantinople and Smyrna, were published in London.

In 1715, in the Highlands of Scotland, by rubbing with the small pox virus, the kindly pock was given. [Simon.]

Public curiosity was effectually awakened, however, by a letter dated Adrianople, April 1st, 1717, O. S., written by Lady Mary Wortley Montague, and confidence in the foreign preventive was established by her patriotic action of almost publicly inoculating her son, in England, four years later, and by the critical experiment of inoculating two children of the Royal Family, in 1722, after a preliminary trial upon seven condemned criminals.

But inoculation did not entirely protect. Kennerdy states "the second infection is rarely or never in the same manner, or the same fullness of malignity," and is commonly called bastard or hog-pox, modern varioloid.

Objectors were plenty. Massey, an English divine, in a sermon against inoculation, 1722, says: "Let the atheist, and the scoffer, the heathen and the unbeliever inoculate and be inoculated." He held that natural small pox was a useful check on the increase of vice and immorality. In France, Monsieur Hecquet objected, because it came from Turkey, and had been well received in a Protestant country.

Another objection was its danger. During the first eight years of its practice in England, out of eight hundred and forty-five inoculations, seventeen died. The results were proportionately about the same in Boston, Massachusetts. Still another objection was the expense which was so considerable, that only a small proportion of the whole population would, or could be inoculated.

At the close of the eighteenth century, statistics showed that, for the thirty years immediately preceding the introduction of inoculation, of a thousand deaths, *seventy-five* were caused by small pox;—for the last thirty years, of a thousand deaths, small pox caused *ninety-five*.

Expense and partial protection, and a definite ratio of deaths would not have stopped the practice of inoculation, but the fatal objection was this: that every case was one of small pox itself, consequently, a constant source of infection to the unprotected. The means of relief increased the general danger. "Medicine was baffled and helpless." No hope of escape:—but, "for after-time,—for millions of our race—the continual raging of that pitiless plague." The dawn of promise, bright with belief of

protection, by contrast made more gloomy the shadow of the pestilence. Again,

"The dreary day grew drearier
Toward night descending."

In the west of England, near Bristol, a village doctor's apprentice heard the tradition among the dairy folks of Gloucestershire, that cow pox protected from small pox. "The thought was never after absent from his mind." For thirty years he studied, investigated and experimented. In 1798, he published his "Inquiry into the Causes and Effects of Variola Vaccinæ," "a master piece of medical induction," claiming:

I. Transmissibility of vaccine virus through human bodies without impairment,

II. Establishing thereby a constant supply.

III. Safety of operation, without infecting others.

IV. Protection from small pox.

This introduces Edward Jenner, the investigating physician, who, of all the children of men, has done most to relieve mankind of misery.

The distinguished surgeon of St. Thomas' Hospital, Dr. Cline, and Dr. Woodville, of the Small Pox Hospital, examined and endorsed the claims. Thousands were vaccinated, were then exposed in every way to the contamination of small pox, and experienced no evil results. England believed finally in the matchless discovery and has legislated accordingly. In 1807, the Report of the Royal College of Physicians was made to the Crown and was adopted in the House of Commons, after "such a debate as is seldom given to matters of concord, when the foremost members of the House honored themselves by honoring the great benefactor of mankind." "From this period dates the almost universal vaccination of children among the educated classes of England."

In 1841, inoculation was made illegal. In 1853, statistics showed an alarming increase of deaths from small pox in the first quinquennial of life, and determined the Act of that year which required parents to have their children vaccinated before they were six months old, imposing a fine of (20) twenty shillings; a single fine closed the case.

In 1867, another law compelled vaccination within the first

three months of life; disobedience to the law was punished by repeated fines or imprisonment.

To Jenner, in recognition of the indebtedness of his countrymen, Parliament gave £30,000.

By the protection which resulted from the investigations of Dr. Jenner, the disease is robbed of nearly all danger. So certain is its prevention, that a death from small pox is generally criminal; if the victim be a child, the natural guardians deserve condemnation for contributory negligence; if an adult, the Board of Health, if they have the power to enforce vaccination, if not, the community, should be pilloried at the bar of public opinion and be made to realize that they are morally guilty of an unnecessary death.*

Upon no investment, or other business venture are so disproportionate chances of failure taken as in the intelligent care of the public health—the sum total of individual health mainly because the public opinion of the past has rested content in the belief that sickness is a matter of chance rather than of cause; or, if of cause, that it selects its victims from those predisposed by unfortunate inheritance or exposed by personal irregularities or vices, and whether with, or without, cause, sickness concerns the individual and not the community, unless it be epidemic.

Since it has been realized that the community is something more than a collection of individual, independent units—that it is composed of interdependent parts, and that the welfare of each person is necessary for the common good, Boards of Health have been established, have received a qualified recognition and a paltry financial support.

But the popular question still remains, "Does it pay?" The nation is a commercial one. Its resources and their development, its complex population, and its rapidly constructed systems of intercommunication, have evolved the commercial spirit. To scold because of the absence of "sweetness and light," which are claimed for a class developed by educational and polite environment, is narrow and illogical. But to attempt to foster the growth of a broader and more enlightened humani-

* References to small pox in this address are from the English Blue Book, containing Report of Commission appointed by Parliament, to Investigate Small Pox.

tarianism by the employment of the activity, the ability, and the enterprise of that commercial spirit, is a judicious and feasible undertaking.

The public condemns a theory as a matter of opinion, but accepts a balance sheet as a matter of fact. Congress makes generous appropriations for commissioners to investigate the cause, and to attempt the prevention of the diseases of American cattle and of "the great American hog": one of its members introduces a bill to offer a prize for the discovery of the cause and the cure of yellow fever: in the former case employing the method of an intelligent profession, in the latter that of an enterprising quack. To educate public opinion by a demonstration of provable statistics, not only that scientific investigation only possible by the support of the State, concerns the general and personal physical welfare, but that the monetary cost of sickness to the nation is greater than the value of all the cattle and hogs in the country, and that much of this results from preventable diseases, will speedily awaken such a sense of responsibility that some action will be taken, which will be creditable to the national reputation, will reasonably result in the prevention of much personal suffering, and secure large additions to the public prosperity.

In the Report of the Vital Statistics of the Tenth Census it is stated: "From the results of data derived from mutual benefit societies in England it has been usual to estimate that for every case of death in a community there are two persons constantly sick; that is to say, that there is an average of two years' sickness to each death, or that, if the annual death rate is 18 per 1,000, the average number constantly sick is about 36 per 1,000 of living population, and this seems to be borne out by the proportion of those taken on sick report in the army. Thus, for the five years, 1878-82 inclusive, the proportion constantly on sick report per 1,000 of mean strength in the United States Army was, for the white troops 43.9 and for the colored troops 41.6, or for the whole an annual mean of 43.7 per 1,000 of mean strength,"—(other tables, etc).

Considering that troops, although carefully selected upon enlistment, are peculiarly exposed, we will take the smaller percentage, that among the general population.

It is a reasonable estimate that, including all varieties of sickness, every sick person must be supported and attended by at least one well person, and that the daily loss to the productive capacity of the country, directly and indirectly, is one dollar for each individual. By the records of the Tenth Census, in 1880 there died 756,893 persons; this would give a constant sickness of 1,513,786 individuals, a much larger number than in the previous estimate from the number reported sick upon June 1, 1880; *but it must be remembered that in that enumeration, from its very character, many would naturally be overlooked, and there were intentionally omitted those under fifteen years of age, the blind, the deaf, and the insane.

Accepting these premises, the conclusion would show that for the year 1880, with a population of a little over fifty millions, the loss to the productive wealth of the United States, from sickness, was over $1,100,000,000, which added to the personal loss of $390,000,000, would give a grand total of nearly $1,500,000,000. In the British Medical Journal, October 22, 1887, a sanitary authority asserts: "It is not only in France that sickness, with the enforced rest and expense which it entails, causes a loss of 708,000,000 francs every year. If preventable diseases in England were charged in like manner, with waste of time and money, and other evils which they involve, we fear that a similar number of pounds sterling instead of francs would not represent the loss to the community."

By the tenth census in the United States there were reported twelve millions of milch cows, twenty-six millions of other cattle and forty-seven millions of hogs. Various diseases, prominently tuberculosis and pleuro-pneumonia among cattle, and hog cholera, were causing so great depreciation of immediate value and threatening even greater prospective loss, that in 1887 Congress appropriated $500,000 for the purposes of investigating the causes and limiting the spread of these diseases; for the same purpose the State of New York appropriated $105,000; Virginia, $75,000, and New Jersey, $12,000. The circumstances warranted the expenditure. Dr. Salmon, Chief of the Bureau of Animal Industry, reports: "The disease (tuberculosis) is no greater here than in other countries, but its widespread preva-

*See page 12.

lence is certain. I have encountered it from the Atlantic Ocean to the Rocky Mountains. Instances where this disease is introduced and spread through whole herds are now so frequent that every veterinarian I am acquainted with, who has a cattle practice, is thoroughly convinced, not only that the malady is contagious, but that it is easily transmitted. This brings up the question as to the identity of human and animal tuberculosis and I unhesitatingly answer it in the affirmative." Dr. J. S. Billings, a recognized authority, states: "I venture to assert that the monetary loss to the cattle interests of this country from tuberculosis is greater than from all the other cattle diseases put together."* Dr. Crundall writes: "I have no hesitation in saying that fully thirty per cent. of the grade cattle in the counties of Seneca and Ontario, N. Y., are affected with tuberculosis."†

The cattle business of this country involves many millions of dollars the entire valuation of all stock in 1880 was over $1,500,000,000. Private interests cannot be trusted to make the necessary sacrifices of destroying stock as long as the public is willing to drink the milk and eat the meat of tubercular cattle; therefore, in the wise exercise of its authority, according to the principles of modern political economy, the Government condemns private infected herds and appropriates the public money to recompense this loss of the owners. If we estimate the value of the cattle as half of the valuation of the entire stock of domestic animals, their average value is about twenty dollars. What is the average value of the citizen? According to Mr. Chadwick, President of the Sanitary Association of England, every human being is worth (to the State) "seven hundred and ninety-five dollars." They are worth more in this country. Within a month a Miss Allen, who had lost the use of her jaw, as she claims because a surgeon of a steamboat company had given her mercury instead of quinine, sued for $22,000 and a jury mulcted the company in $11,000 damages. Within the same time a verdict against the Boston & Albany Railroad has been given for the second time, in the case of a seven-year-old boy, whose leg was so severely crushed by the falling of a lamp-

*Journal Comparative Medicine and Surgery: Vol. VII, No. 1, p. 85.
†Ibid., p. 86.

post that amputation was necessary, to the amount of $28,500.

It is recognized that a person, seriously injured through no contributory negligence, can recover larger damages if he survives, than his heirs can recover if he be killed outright.

For a death thus accidentally caused the maximum sum allowed by the courts in some of the States is $5,000. In a community where "one man is as good as another," this appraisement of the Statute Law must be accepted as the valuation of the individual.

In 1880 there were reported 91,270 deaths from consumption, which was the largest number of deaths from any single disease, and the mean age of death was the thirty-seventh year, when a healthy person is at about the maximum of mental and physical vigor; therefore, if the loss by consumption in people is estimated, as the loss in cattle by the same disease would be, it amounted in that single year to more than $456,000,000, and for the total deaths more than $3,784,000,000.

Accepting these estimates of value, the total cost to the United States of sickness among the people, and the loss by death, including loss and expense to the individual, and loss to the State in productive and personal value as citizens, amount annually to more than $5,274,000,000.

A decrease of one per cent. in the death rate would reduce the number of deaths, upon the basis of the census of 1880, by 7,568, and effect a saving of total cost to the individual and to the State of nearly $50,000,000 of money.

That sanitation reduces the death rate, official statistics prove: most remarkably however in limited localities. Note a single instance: Memphis, Tennessee, afflicted by the yellow fever epidemics of 1878 and 1879, "was in a sorry plight; its population greatly diminished and impoverished, its business had fled to other places, its debt heavy, and the interest more than due, the treasury empty, the city practically bankrupt." It was such a menace to the prosperity of the surrounding country that "in one instance at least the heartless suggestion was offered that the flames be made to consume what the pestilence had spared." The city resigned its charter, and most rigorous sanitation was adopted. In 1887 it had become "in some respects a model city, the largest inland cotton market in the world," and its for-

mer "normal death rate of 35 per 1,000 had been reduced to 9 per 1,000 of the white, and 26 per 1,000 of the colored resident population."*

That a large reduction may be made in total number of deaths in the United States is the belief of the Commissioner of the Census, who reports: "Nearly one hundred thousand deaths occurred during the census year * * * which were, in a sense, unnecessary and preventable."

These enormous totals may seem exaggerations, but in reality they are undervaluations. They are based upon the number of deaths reported in the Tenth Census. The deaths so reported are never more than the actual number, but are often less.

The number of deaths returned by the census enumerators, when compared with the returns of the State Board of Health, were, in Massachusetts, outside of Boston, 26.63% below the actual number, and in New Jersey 36.50%. In other States the enumeration was probably equally inaccurate: the number of deaths returned throughout the whole country was at least 25% below the actual number.†

No mention has been made of the vast sums expended for sick and wounded pensioners, for whose benefit since the war have been appropriated over $1,100,000,000.

These estimates are for tangible loss: who can estimate the indirect loss to the Nation from the impaired work of the disabled, from the enfeebled intellectual and bodily capacity, from the inherited tendency to vicious habits of thought and living?

The laws of nature are inexorable—disobedience creates the penalty—the mortgage upon functional or organic overdrafts are inevitably foreclosed. Through inherited feebleness and personal physiological ignorance and crimes, the present generation does not live out half its days. Nations, as individuals, too ignorant, or too careless to secure the health and to strengthen the character of their people, fail in their natural duty, and, no longer in harmony with their environment, yield place to such new evolution as the times may demand.

Medicine, as an art, treats single cases of sickness or injury—as a science, institutes inquisitions regarding the causes of disease

*Report Conn. Board of Health, 1887, pp. 158–160.
†Census 1880, Vital Statistics, Vol. I, p. xix.

and their prevention. The busy practitioner is occupied with the immediate care of individual patients. The medical scientist studies the historical progress of medicine, critically analyzes theories, experiments and experiences; investigates the origin, development and dissemination of the material causes of the "ills that flesh is heir to"—contrasts the influences of varying social conditions, examines predisposing susceptibilities produced by inheritence and habits of life, and solicits nature to reveal the occult mysteries of telluric and atmospheric environment, and to explain "the sweet influences of pleiades."

The art and science are component parts, intimately related, of a single system. Their acquisitions enrich the common armamentary. But for the successful prosecution of their complemental labors, so different are the intellectual powers and the mental processes required, that they are rarely combined in the same individual, or, if combined, the exhausting labors demanded for success in one department, leave a wearied body and mind, and scant time for the other.

Medical men in America are mainly dependent for support upon their own exertions, and with few exceptions rarely accumulate from professional work more than a comfortable living; their scientific work is at personal expense.

Abroad, the money necessary for investigation, upon an extended scale, is appropriated by the Government. Hence it has naturally resulted that prominent surgeons and physicians in America have acquired high rank in the profession, but the great discoveries during the last fifteen years—revolutionizing the theories of medicine—have originated in the laboratories of the Continent. There Pandora's box has been again opened and hope, the sole remnant of the gifts of the Gods, has revealed the hidden cause of the evils that had before escaped. The microscope, like the prayer of the prophet, made plain invisible hosts, and invites to an investigation, which must close only when the prevention of disease is as sure as the cause. The necessary empiricism of the past may now be engrafted with the exact knowledge of the future.

The key of the situation is even now within the ken of the profession, but the mysteries attending the preparation of the nidus appropriate for the development of the various bacilli are

problems, not for the experience of the practitioner, but for the investigation of the scientist; not for the bedside of the patient, but for the laboratory of the bacteriologist. To some authoritative central Bureau, with the best scientific abilities, and ample financial resources, must also be referred the study of the unexplained distribution, throughout the United States, of diphtheria, cancer, consumption and other diseases, which, upon the illuminated charts of the census seem to have boundaries as definite as those of the States.

Will not a reasoning people, claiming as "unalienable rights," life, liberty, and the pursuit of happiness, if convinced that life and the pursuit of happiness are curtailed by preventable disease, demand protection? If assured by so eminent an authority as Dr. Austin Flint, that "even a person, with an inherited tendency to consumption, would never develop the disease, if he could be absolutely protected against infection with the tubercle bacillus," will they not eagerly provide every means to discover the origin, the development, the poisonous activities of these powerful agents of evil, and to accomplish their destruction? If assured by their official reports, that annually one hundred thousand citizens die of preventable diseases, will there not arise so violent a protest, that prevention shall be enforced by the National laws? Alas! we must answer, "No." For a decade, hundreds of thousands of unwilling victims have been annually sacrificed to the juggernauts of indifference and ignorance

A father's devotion, a mother's love, a son's respect, and a daughter's affection, a patriot's loyalty, a humanitarian's sympathy, and a philanthropist's solicitude, either singly or combined, have never demanded governmental investigation. Even self-protection is lulled into neglect, if the danger be postponed. They have been "tried in the balances and found wanting."

Fortunately for the welfare of the Nation, we may yet invoke the master spirit that commands the age. Financial considerations outlast and outweigh personal sentiments, when a continent is the field of action. The sensitiveness of capital has no rival in its demand for protection. The Government, and the far reaching business enterprises of the country have a more tangible interest in the health of the people, scattered throughout the length and breadth of the land, than individuals are likely to

have, and also receive more direct returns from the improvement of the public welfare. To lower the death rate, thereby favorably altering the computations of life insurance tables, would redound to the advantage of all. An enormous decrease in sickness, and fewer deaths, increasing the general productive and receptive capacity, would assist in largely developing the National resources. The prevention of consumption—not included in the census of 1880, if the bacillus can be destroyed, as it may now be, among the preventable diseases—would prevent an annual loss of over $450,000,000.

Who shall arouse a public sentiment which may attempt these beneficent reforms? Nathan said unto David, "Thou art the man." The Republic, conferring personal liberty to the citizen, demands a personal service; and granting unrestricted opportunities for self-improvement, imposes the gravest responsibilities.

Says Professor Sumner: "Every honest citizen of a free State owes it to himself, to the community, and especially to those who are at once weak and wronged, to go to their assistance and to help redress their wrongs. Whenever a law or social arrangement acts so as to injure anyone, and that one the humblest, then there is a duty on those who are stronger, or who know better, to demand, and fight for redress and correction."

Not many years ago a tramp received from the benevolent in Bridgeport money and food to relieve his complaints of sickness, but when suspected of small pox, doors were shut in his face. For many hours he plodded the streets, his brain racked with dolorous pain, his body feverish with sore sickness; women drove him from their homes; men fled from his presence.

"Oh, it was pitiful,
In a whole city full
Friends he had none."

As I watched by his dying bed I wished that every opponent of vaccination could have been with me. He was a man, when in health, like the rest of us, but then moaning with pain or in harmless delirium reverting to the home of his childhood;—with face whose early softness had been hallowed by the holy tears of a mother's affection, or dimpled with delight at a mother's joy,

now so changed that none might know his family, or lineage, or nation, or race, or even his manhood itself.

Without act of a brother's sympathy or a father's pity; without the tender touch of a sister's hand, without a word of love from a mother's heart, he died.

"No reckoning made, but sent to his account
With all his imperfections on his head."

That death was unnecessary—the disease was preventable. If by his own fault he died

"It was a grievous fault;
And grievously hath the dead man answer'd it."

If by the folly of his parents, then did they doom him to a painful, dreadful death; if by the negligence of the State, then was it "a blunder which is worse than a crime."

Small pox, from a preventable, has become a prevented disease; until all preventable diseases receive a similar quietus let us cry aloud.